United States Department of Agriculture
Animal and Plant Health Inspection Service
4700 River Road
Riverdale, MD 20737

Permit to Move Live Plant Pests, Noxious Weeds, and Soil
Interstate Movement
Regulated by 7 CFR 330

This permit was generated electronically via the ePermits system

<table>
<thead>
<tr>
<th>PERMITTEE NAME</th>
<th>PERMIT NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Terrence Kirkpatrick</td>
<td>P526P-11-01586</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ORGANIZATION</th>
<th>APPLICATION NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Arkansas Nematode Diagnostic Laboratory</td>
<td>P526-110105-011</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDRESS</th>
<th>FACILITY NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>362 Highway 174 North, Hope, AR 71801</td>
<td>2334</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MAILING ADDRESS</th>
<th>HAND CARRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>362 Highway 174 North, Hope, AR 71801</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHONE</th>
<th>FAX</th>
<th>DESTINATION</th>
<th>RELEASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(870) 777-9702 Ext. 111</td>
<td></td>
<td>362 Highway 174 North, Hope, AR 71801</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DATE ISSUED</th>
<th>EXPIRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/25/2011</td>
<td>04/25/2014</td>
</tr>
</tbody>
</table>

Under the conditions specified, this permit authorizes the following:

<table>
<thead>
<tr>
<th>Article Category</th>
<th>Regulated Article</th>
<th>Life Stage(s)</th>
<th>Intended Use</th>
<th>Shipment Origins</th>
<th>Originally Collected</th>
<th>Culture Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic</td>
<td>Fungi</td>
<td>Any</td>
<td>Diagnostic Labs</td>
<td>Continental U.S.</td>
<td>Originally Collected from USA including territories</td>
<td>N/A Diagnostic Sample As Submitted</td>
</tr>
<tr>
<td></td>
<td>Nematodes</td>
<td>Any</td>
<td>Diagnostic Labs</td>
<td>Continental U.S.</td>
<td>Originally Collected from USA including territories</td>
<td>N/A Diagnostic Sample As Submitted</td>
</tr>
<tr>
<td></td>
<td>Plant Pathogenic Viruses</td>
<td>Any</td>
<td>Diagnostic Labs</td>
<td>Continental U.S.</td>
<td>Originally Collected from USA including territories</td>
<td>N/A Diagnostic Sample As Submitted</td>
</tr>
<tr>
<td></td>
<td>Plant Pathogens</td>
<td>Any</td>
<td>Diagnostic Labs</td>
<td>Continental U.S.</td>
<td>Originally Collected from USA including territories</td>
<td>N/A Diagnostic Sample As Submitted</td>
</tr>
</tbody>
</table>

SPECIAL INSTRUCTIONS TO INSPECTORS
See permit conditions below

Permit Number P526P-11-01586

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

<table>
<thead>
<tr>
<th>Shailaja Rabindran</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>04/25/2011</td>
</tr>
</tbody>
</table>

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.Cs 1001)
Instructions To PPQ Inspectors And State Officials regarding facility inspections:

1. This diagnostic laboratory may be inspected with or without prior notice at any time during regular business hours and must be in compliance with all authorizations and conditions specified in this permit during such inspections. PPQ Permit unit in Riverdale, MD, may also contact you to schedule formal inspections of this facility as part of continuing permit compliance monitoring.

2. Prior to inspections, contact PPQ Permit unit in Riverdale, MD, at 301 734-0654 for current information or documentation on the facility.

3. Any inspections or visits must be documented in the files located in the PPQ Permit unit in Riverdale, MD. You may fax reports to 301-734-5392 or email them to Pest.Permits@aphis.usda.gov.

4. Report all concerns about or violations of this permit to the PPQ permit unit in Riverdale, MD, at 301 734-6343.

Permit Number P528P-11-01586

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

Shailaja Rabindran 04/25/2011

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)
PERMIT CONDITIONS

This permit authorizes the interstate movement of infected, infested, or potentially infected plant materials that may contain plant pests with associated soil and debris to identify the plant pests listed in the article column of this permit from various locations in the continental United States (samples from Hawaii, Puerto Rico, U.S. Virgin Islands, Guam and American Samoa are not authorized). The permit is issued to Terrence Kirkpatrick of the University of Arkansas Nematode Diagnostic Laboratory, located at 362 Highway 174 North, Hope, AR 71801. This authorization is strictly for plant disease diagnostic determinations in a controlled laboratory environment. Culture collections and any other laboratory/field research is not authorized under this permit (separate permits are required for such activities). Research on the regulated materials must be carried out in the inspected facility # 2334. Plant inoculations are not authorized.

1. You must supply this office a report by June 30 and December 31 of each year until the expiration of the permit of all pests of concern, quarantine pests and new state records (see www.ceris.purdue.edu/napis/pests/index.html, http://www.aphis.usda.gov/plant_health/permits/organism/plant_pathogens.shtml) identified in your laboratory under this permit. The report must include permit number, the origins and dates of samples, and the identified organisms. Tentative identifications that have been forwarded to other laboratories for confirmation must also be reported with the name of the confirming laboratory. All confirmed identifications that were previously noted as tentative must also be reported. Reports must be sent to USDA, APHIS, PPQ, RIPPS, 4700 River Rd., Unit 133; Riverdale, MD 20737; or faxed to 301-734-5392; or emailed to Pest.Permits@aphis.usda.gov as Word, Excel or pdf documents.

A negative report must also be submitted stating that no quarantine pests, or pests of concern were identified or cultures obtained.

The permit holder must notify the permit unit via e-mail at pest.permits@aphis.usda.gov whenever the identity of a previously unidentified organism is confirmed as a species new to science, the United States (quarantine pest), or the State of Arkansas. Please include the permit number and ATTN: Shailaja Rabindran in the subject line. Please also inform the state SPHD and SPRO.

All operations must be consistent with information submitted in association with above listed APHIS facility inspection number.

2. All samples must be mailed/shipped directly to the permit holder.

All infected plant material shipped interstate must be packed in 5 mil double plastic bags or if viable plant material is required in cloth or paper bags (or equivalent material). These bags must be transported in a sturdy, sealed, leak-proof cardboard, metal box, wood, or other material of equivalent strength.

You must instruct senders of infected plant materials to double seal samples in heavy plastic bags (e.g. two zip-lock freezer bags) or if viable plant material is required in cloth or paper bags (or equivalent material) and to place the sealed bags in sturdy shipping container (e.g., Kraft paper or plastic shipping tubes/boxes).

3. All samples received that originate from States outside those contiguous to your state and all samples suspected of containing select agents (see www.aphis.usda.gov/ppq/permits/agr_bioterrorism ), quarantine pests (see http://www.aphis.usda.gov/import_export/plants/plant_imports/regulated_pest_list.shtml) or other pests of concern must be initially opened and examined within a certified biological safety cabinet (Class II, Type A or equivalent). [This type of cabinet uses HEPA filtration]. Following initial processing, samples in culture dishes, in microscopic mounts or in equivalently secure containers may be removed from the safety cabinet for subsequent diagnostic determinations. For large samples, bags may be carefully opened outside the biological safety cabinet to obtain smaller samples for subsequent processing in the biological safety cabinet.

4. Upon receipt, all samples must remain within the approved diagnostic laboratory identified on this permit. Laboratory access is restricted to individuals authorized by the permit holder.

---

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

<table>
<thead>
<tr>
<th>Shailaja Rabindran</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>04/25/2011</td>
</tr>
</tbody>
</table>

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)
5. This permit does not authorize movement or use of plant pathogens listed in the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. If any organism listed as a Select Agent is identified from materials associated with this research, the permit holder is required to notify APHIS, Agricultural Select Agent Program (ASAP) immediately by phone at 301-734-5960, and within seven (7) days submit APHIS/CDC Form 4 (Report of Identification of a Select Agent or Toxin in a Clinical or Diagnostic Laboratory) to APHIS, ASAP; 4700 River Rd, Unit 2, Riverdale, MD 20737 (see instructions at: http://www.aphis.usda.gov/programs/ag_selectagent/index.shtml). Failure to comply with this requirement is a violation of the Agricultural Bioterrorism Protection Act of 2002.

6. All packing materials, plant parts, soil, shipping boxes, etc. which contained or were associated with quarantine pests, select agents or other pests of concern will be placed in autoclavable bags and autoclaved prior to disposal.

7. There is to be no further distribution of infected or potentially infected plant materials, organisms or samples without prior approval from State and Federal regulatory officials.

8. All infected plant materials and samples being temporarily stored prior to identification must be kept in a locked area that is accessible only by authorized personnel.

9. The permit holder must maintain an official permanent work assignment at the address identified on this permit. If the permit holder ceases assignment/affiliation at the address identified on this permit, or personnel circumstances change in any way, then a compliance officer must be notified at the PPQ permit unit immediately (that is, within one business day) by either (a) email to pest.permits@aphis.usda.gov, (b) fax to 301-734-4300 or 8700, or (c) conventional mail to USDA PPQ Pest Permit Unit, 4700 River Road, Riverdale, MD 20737. The permit holder must destroy all regulated organisms prior to departure unless the permit holder either (a) requests cancellation of this permit and complies with all permit-specific termination conditions, (b) applies for and receives a permit to move the organisms to a new facility, or (c) relinquishes control of the regulated organisms to a qualified individual who obtained a permit for the continued use of these regulated organisms prior to this permit holder's departure.

10. Without prior notice and during reasonable hours, authorized PPQ and State regulatory officials shall be allowed to inspect the conditions associated with the regulated organisms authorized under this permit.

11. Failure to comply with the terms and conditions of this permit may be cause for: (a) cancellation of this permit; (b) cancellation of other valid permits issued to the individual named as the holder of this permit; (c) seizure and destruction of permitted organisms; (d) denial of future permit applications made by the holder of this permit; (e) making the holder of this permit liable for civil penalties; and (f) subjecting the holder of this permit to criminal prosecution as provided in the Plant Protection Act.

Any alteration, forgery or unauthorized use of this permit and associated Federal Forms are subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001).

12. Movement of strains of approved species that have been genetically engineered by recombinant DNA technology (i.e., genetically engineered organisms) are not authorized, and are specifically excluded from the authorizations of this permit.

13. This permit is issued only for the named permit holder at the address(s) identified on this permit. This permit cannot be transferred or assigned nor does it fulfill or modify the requirements of any other federal or state regulatory authority (such as the U.S. Environmental Protection Agency, Animal Health Act, the U.S. Fish and Wildlife Service, the U.S. Food and Drug Administration, the Centers for Disease Control and Prevention, or your State's Department of Agriculture).

The permit holder verifies United States residency by initialing and accepting these permit conditions. If you are not a United States resident, it is unlawful for you to initial or accept these permit conditions because a USDA 526 Plant Pest Permit can only be issued to United States residents.

The permit holder must maintain a valid permit so long as the regulated organisms are alive and in your possession. The permit holder must safeguard and dispose of the regulated organisms during the term of this permit. This permit cannot be extended or renewed. A new permit is required for uninterrupted authorization/use of regulated organisms after this permit expires.

Permit Number P526P-11-01586

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING
PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

| Shailaja Rabindran | 04/25/2011 |

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)
14. If an accidental release into the environment occurs, immediate notification must be made to APHIS, PPQ, Pest Permit Unit; 4700 River Rd., unit 133; Riverdale, MD 20737; within one business day by calling 866-524-5421 or by e-mail to pest.permits@aphis.usda.gov. A written report of the incident must be submitted within 5 working days identifying: (a) the name of the permit holder (responsible person), (b) the permit number, (c) all released organisms identified to at least the species level, (d) the country or State of origin of the organism, (e) the nature of the release, and (f) measures already taken to contain, reduce or limit the effects of the accidentally released organism. Any plans prepared to contain, reduce or limit the effects of the accidentally released organism may be submitted as developed.

15. The permit holder verifies United States residency by initialing and accepting these permit conditions. If you are not a United States resident, it is unlawful for you to initial or accept these permit conditions because a USDA 526 Plant Pest Permit can only be issued to United States residents.

16. If for legal or contractual reasons you must store the cultures for long term, you can keep the cultures as long as cultures are NEVER used except for the occasional reculturing to ensure long term viability.

Any other use will be a violation of these permit conditions and may result in an APHIS compliance investigation.

17. Shipments carried in vehicles must meet all packaging requirements. Any accidents during transport that compromise the security of shipment packaging shall be immediately reported to the USDA either at 866-524-5421 or by e-mail to pest.permits@aphis.usda.gov using the permit number and ATTN: Sutker in the subject line, and describe the efforts taken to contain the pests.

18. All necessary precautions must be taken to prevent the escape of the regulated material.

19. This authorization is strictly for research in controlled environment and is not valid if the organism(s) will be used in field research or will be released into the environment.

20. No plant inoculations are authorized.

Vector transmission is NOT permitted under this authorization.

Animal inoculations are not authorized.

Plants cannot be propagated.

21. All samples potentially containing mobile arthropod life stages must be placed in a refrigerator for at least 4 hours upon receipt and prior to opening in the Class II, Type A biological safety cabinet.

Arthropod specimens that are either frozen, preserved in 70 percent alcohol, or preserved in another medium (e.g. fixed in glutaraldehyde) may be moved intra- and interstate without further permitting.

22. (a) Adequate protective clothing must be worn when working with soil and infected/infested samples so that movement of plant pests out of the facilities on hands, shirts, pants, and shoes does not occur. This should include authorized personnel and visitors using disposable plastic overshoes while in the areas involved in processing and maintaining soil samples. A suitable container, suitably positioned, must be available for discarded overshoes when people are leaving the building or work area.

(b) Laboratory flooring materials must be monolithic and consist of building materials that can be cleaned. Flooring materials must be maintained free of soil and defects that allow growth or survival of soil-borne pests.

(c) Work benches must consist of building materials that can be cleaned, and are maintained free of defects that allow growth or survival of soil-borne pests.

(d) Disposable blotter materials used on workbench surfaces must be autoclaved after each position of work is completed. Work surfaces must be appropriately cleaned between samples to reduce the potential for survival of soil-borne pests.

(e) Sinks where soil is handled must be equipped with traps that allow collection of waste water, and subsequent treatment of this wastewater sufficient to kill or destroy all plant pathogen life stages, including nematodes, prior to disposal.

(f) All diagnostic materials must be heat or chemically treated, on-site, sufficient to kill or render non-viable all life stages prior to disposal in municipal sewer or waste systems.

Permit Number P526P-11-01586

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING
PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

Shailaja Rabindran

DATE

04/25/2011

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)
(g) Any sink / laboratory water that may contain live nematode life stages (wastewater), infested soil, infested growing media, and infected plant materials (waste) must be sufficiently treated to kill or destroy all nematode life stages on-site prior to disposal in municipal sewer or waste systems.

23. Upon completion of diagnoses, all infected/infested materials associated with quarantine pests or other pests of concern must be decontaminated by autoclave, incineration, or other equivalent methods. Glassware and other materials used to conduct diagnoses must be appropriately decontaminated.

24. Autoclaving Waste

a. Waste must be autoclaved at 121 degrees Centigrade (250 degrees Fahrenheit) for a minimum of 30 minutes.

b. Autoclave tape or other indicators must be placed on each bag or sharps container prior to treatment. The autoclave tape or other indicator on each container must be checked to verify color change before disposal.

c. The autoclave log must be completed by each user for each autoclave cycle. All parameters must be noted as listed on the log for each autoclave load.

d. If the autoclave does not attain the minimum time and/or temperature or the autoclave tape does not change color, a notation must be made in the comment section of the autoclave log. The load must then be re-autoclaved after placing new tape on the material. If minimum time and temperature is not attained on the second cycle, users must contact the person responsible for maintaining the unit to initiate repairs. Waste should then be treated at the alternate autoclave facility.

e. Thermometers on the autoclave must be calibrated annually, and a written record must be maintained. This should be done by an authorized autoclave service company during routine servicing.

f. Every 6 months, you should use a commercially available test indicator kit that uses bacterial spores Bacillus stearothermophilus that are rendered unviable at 250 degrees F or 121 degrees C. For the test, ampoules of B. stearothermophilus are autoclaved along with a load of waste. Upon completion of the cycle, the ampoules are incubated for 48 hours and then observed for any sign of growth, which would indicate that the autoclave is not sterilizing properly. If any growth is observed, have autoclave serviced and retested until it passes.

END OF PERMIT CONDITIONS